# CLAIMS

1. A method of determining a fluid inflow profile along the length of a permeable inflow region of an underground wellbore, the method comprising the steps of:

- transferring heat into or from the permeable inflow region of the wellbore during a well shut in period such that at least a substantial part of the inflow region has a temperature which is different from the temperature of the surrounding formation;
- starting production of hydrocarbon fluids via said permeable inflow region;
- measuring substantially simultaneously the temperature of the fluids at various points along at least part of the length of the inflow region; and
- determining at selected intervals of time after production start up a temperature profile along at least part of the length of the inflow region on the basis of the thus measured temperatures;

characterised in that the method further comprises determining a fluid inflow profile along the length of said inflow region on the basis of a comparison of the determined temperature profiles at selected intervals after production start up.

2. The method of claim 1, wherein the level of temperature variation per unit of time is used as an indicator of the level of influx of fluid at various points along the length of said inflow region.

3. The method of claim 2, wherein the inflow profile is determined such that if at a specific location the measured temperature variation over time is higher than

at adjacent locations along the length of the permeable inflow region the thus measured peak in the temperature variation per unit of time is used as an indicator that at said specific location the influx of fluids is higher than at said adjacent locations, whereas if at another specific location the measured temperature variation per unit of time is lower than at adjacent locations along the length of the permeable inflow region the thus measured dip in the temperature variation per unit of time is used as an indicator that at said other specific location the influx of fluids is lower than at said adjacent locations.

4. The method of any one of claims 1-3, wherein at least a substantial part of the permeable inflow region is heated during the well shut-in period and wherein during an initial period of time after starting production of hydrocarbons via said permeable inflow region heating of the permeable inflow region is continued and wherein during a subsequent period of time following said initial period heating of the permeable inflow region is interrupted, and the temperature is measured both during said initial and subsequent periods of time.

5. The method of claim 4, wherein differences between the temperature variation over time measured during said initial and subsequent period are used to determine a heat capacity of the inflowing fluid.

6. The method of claim 5, wherein a ratio of the temperature variation over time measured during the initial period and during the subsequent period is determined for various points along the length of the inflow region and wherein said ratio is used as an indicator of the heat capacity of the fluid flowing into the well.

7. The method of claim 6, wherein a relatively high ratio between the temperature variation measured during the initial and subsequent periods is used as an indicator that the inflowing fluid has a relatively low heat capacity and a relatively high gas content.

8. The method of any preceding claim, wherein the permeable inflow region is heated by an electrical heater cable extending along at least a substantial part of the length of the permeable inflow region and wherein the temperature is measured by means of a fiber optical temperature sensor extending along at least a substantial part of the length of the permeable inflow region.

9. The method of claim 8, wherein the fiber optical temperature sensor is strapped to the outer surface of the electrical heater cable.

10. The method of claim 8, wherein the electrical heater cable comprises an electrical conductor which is surrounded by a mineral insulation layer comprising a compacted mineral powder, which layer is enclosed in an annular metal sheath, and the fiber optical sensor is embedded in a channel extending through the mineral insulation layer.

11. A method of producing crude oil from a subterranean formation, wherein the influx of crude oil and/or other fluids into the well is determined and/or adjusted to an optimal level on the basis of the method according to any one of claims 1-10.

12. A heater and distributed temperature sensing system suitable for use in the method according to any one of claims 1 to 11, comprising a one or more mineral insulated heater cables, which each comprise an electrical conductor which is surrounded by a mineral insulation layer comprising an compacted mineral powder,

which layer is enclosed in an annular metal sheath, and a fiber optical distributed temperature sensor which extends along at least a substantial part of the length of one or more mineral insulated heater cables .

13. The heated and distributed temperature sensing system of claim 12, wherein at least one fiber optical distributed temperature sensor extends through a channel extending through the mineral insulation layer of at least one of the mineral insulated heater cables.